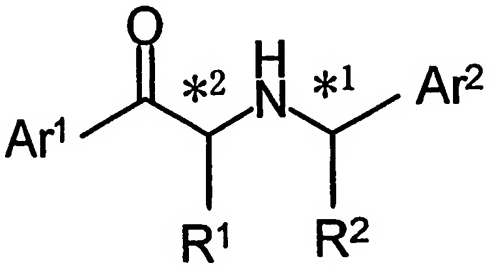
AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

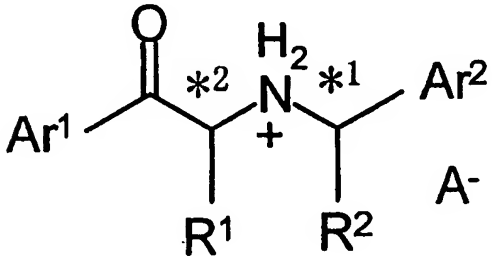
LISTING OF CLAIMS:

1. (original): A process for producing an optically active α-substituted aminoketone represented by formula (4):



(4)

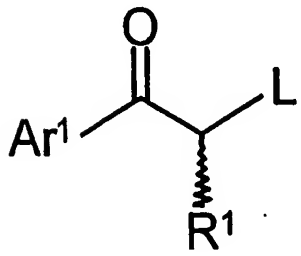
(wherein Ar^1 and Ar^2 each independently represent a substituted or unsubstituted C_6-C_{15} aryl group, R^1 represents a C_1-C_{12} alkyl or C_7-C_{12} aralkyl group, R^2 represents a C_1-C_{12} alkyl group, *1 and *2 each represent an asymmetric carbon atom) or an optically active α-substituted aminoketone salt represented by formula (5):



(5)

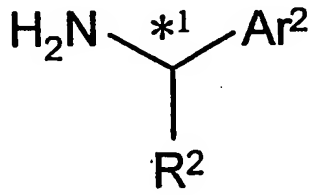
(wherein Ar^1, Ar^2, R^1, R^2, *1, and *2 are the same as above, and A^- represents a counter anion), the process comprising the steps of:

reacting an α-substituted ketone represented by formula (1):



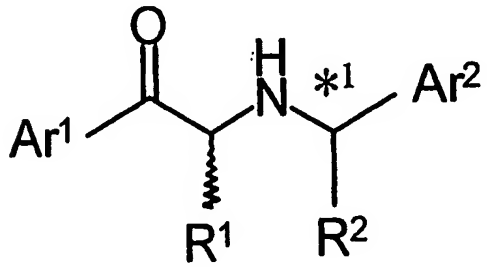
(1)

(wherein Ar^1 and R^1 are the same as above, and L represents a leaving group) with an optically active amine represented by formula (2):



(2)

(wherein Ar^2, R^2, and *1 are the same as above) to yield a mixture of diastereomers of an optically active α-substituted aminoketone represented by formula (3):



(3)

(wherein Ar^1, Ar^2, R^1, R^2, and *1 are the same as above); and

isolating one diastereomer from the mixture after optionally yielding salts of the diastereomers with an acid.

2. (original): The process according to claim 1, wherein L is a halogen atom.

3. (original): The process according to claim 2, wherein the halogen atom is a chlorine atom or bromine atom.

4. (previously presented): The process according to claim 1 wherein Ar^2 is a phenyl group or a p-methoxyphenyl group; and R^2 is a methyl group.

5. (previously presented): The process according to claim 1, wherein R^1 is a methyl group or an ethyl group.

6. (previously presented): The process according to claim 1, wherein, in the step of isolating the diastereomer from the mixture of the diastereomers of the optically active α-substituted aminoketone represented by formula (3), a crystallization method, a chromatographic method, or a distillation method is employed.

7. (previously presented): The process according to claim 1, wherein, in the step of isolating the diastereomer from the mixture of the diastereomers of the optically active α-substituted aminoketone represented by formula (3), the salts of the diastereomers with the acid are yielded, and the salt of one diastereomer is preferentially crystallized from a solvent.

8. (original): The process according to claim 7, wherein the acid is sulfonic acid.

9. (original): The process according to claim 8, wherein the sulfonic acid is methanesulfonic acid.

10. (previously presented): The process according to claim 7, wherein the solvent is at least one selected from the group consisting of ester solvents, ether solvents, ketone solvents, halogenated solvents, alcohol solvents, hydrocarbon solvents, nitrile solvents, and water.

11. (previously presented): The process according to claim 7, wherein the solvent is ethyl acetate, acetone, or dimethoxyethane.

12. (previously presented): The process according to claim 1, wherein, in formula (4) or (5), the absolute configuration at *2 is S and the absolute configuration at *1 is R; or the absolute configuration at *2 is R and the absolute configuration at *1 is S.

13. (original): The process according to claim 7, wherein the acid is hydrogen halide.

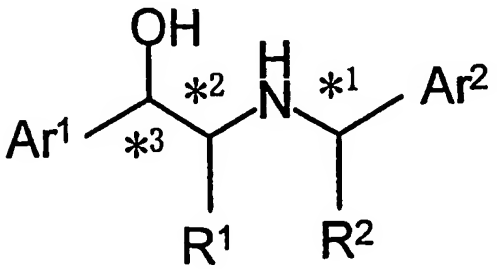
14. (original): The process according to claim 13, wherein the hydrogen halide is hydrogen chloride or hydrogen bromide.

15. (currently amended): The process according to claim 7, wherein the solvent is an alcohol solvent or water.

16. (previously presented): The process according to claim 7, wherein the solvent is ethanol or a mixture of ethanol and water.

17. (previously presented): The process according to claim 13, wherein, in formula (4) or (5), the absolute configuration at *2 is R and the absolute configuration at *1 is R; or the absolute configuration at *2 is S and the absolute configuration at *1 is S.

18. (previously presented): A process for producing an optically active β-substituted amino alcohol represented by formula (6) or a salt thereof:



(6)

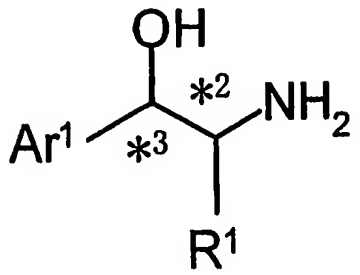
(wherein Ar^1, Ar^2, R^1, R^2, *1, and *2 are the same as in formula (4) of claim 1, and *3 represents an asymmetric carbon atom), comprising a step of stereoselectively reducing an optically active α-substituted aminoketone represented by formula (4) of claim 1 produced by the process of claim 1 or an optically active α-substituted aminoketone salt represented by formula (5) of claim 1 produced by the process of claim 1.

19. (previously presented): The process according to claim 18, wherein the step of stereoselectively reducing comprises selectively reducing an anti-isomer using a boron compound in methanol, ethanol, or a mixture of ethanol and water.

20. (original): The process according to claim 19, wherein the boron compound is sodium borohydride.

21. (previously presented): The process according to claim 18, wherein, in formula (6), the absolute configuration at *2 is S, the absolute configuration at *1 is R, and the absolute configuration at *3 is R; or the absolute configuration at *2 is R, the absolute configuration at *1 is R, and the absolute configuration at *3 is S; or the absolute configuration at *2 is R, the absolute configuration at *1 is S, and the absolute configuration at *3 is S; or the absolute configuration at *2 is S, the absolute configuration at *1 is S, and the absolute configuration at *3 is R.

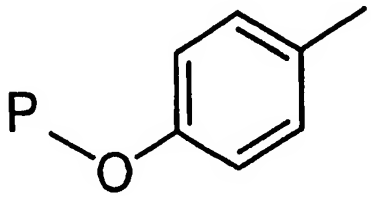
22. (withdrawn): A process for producing an optically active β-amino alcohol represented by formula (7) or a salt thereof:



(7)

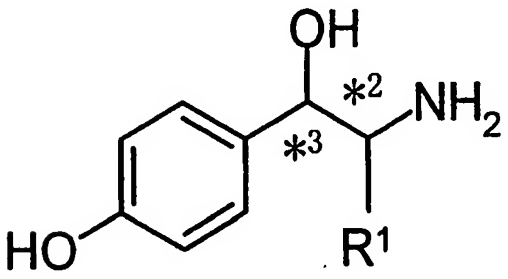
(wherein Ar^1, R^1, *2, and *3 are the same as in formula (6) of claim 18), comprising the step of hydrogenolyzing an optically active β-substituted amino alcohol represented by formula (6) or a salt thereof produced by the process of claim 18.

23. (withdrawn): The process according to claim 22, wherein, in formula (6), Ar^1 is a p-hydroxyphenyl group or a hydroxyl-protected p-hydroxyphenyl group represented by formula (10):



(10)

(wherein P represents a hydrogen atom or a protecting group protecting the hydroxyl group), and an optically active β-amino alcohol represented by formula (9) or a salt thereof:



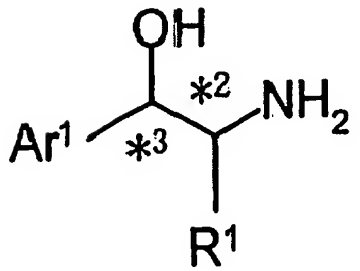
(9)

(wherein R^1, *2, and *3 are the same as in formula (6)) is produced by the hydrogenolysis after optionally removing the protecting group protecting the hydroxyl group.

24. (withdrawn): The process according to claim 23, wherein P represents a benzyl-containing protecting group, an aroyl-containing protecting group, or a sulfonyl-containing protecting group.

25. (withdrawn): The process according to claim 23, wherein, in formula (9), the absolute configuration at *2 is S and the absolute configuration at *3 is R; or the absolute configuration at *2 is R and the absolute configuration at *3 is S.

26. (withdrawn): A process of producing an optically active β-amino alcohol represented by formula (7) or a salt thereof:

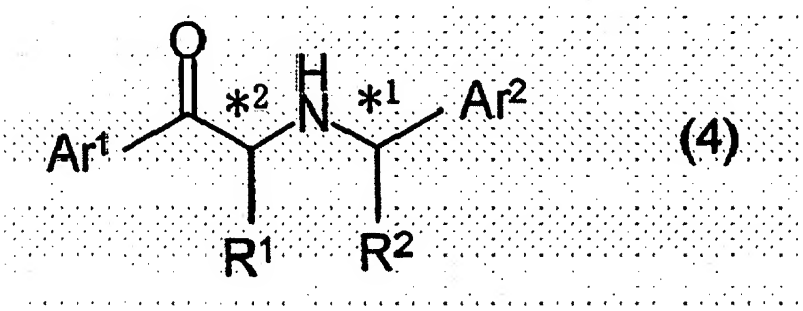


(7)

(wherein Ar^1 represents a substituted or unsubstituted C_6-C_{15} aryl group, R^1 represents a C_1-C_{12} alkyl or C_7-C_{12} aralkyl group, and *2 and *3 each represents an asymmetric carbon atom, comprising:

stereoselectively reducing while simultaneously performing a hydrogenolysis of

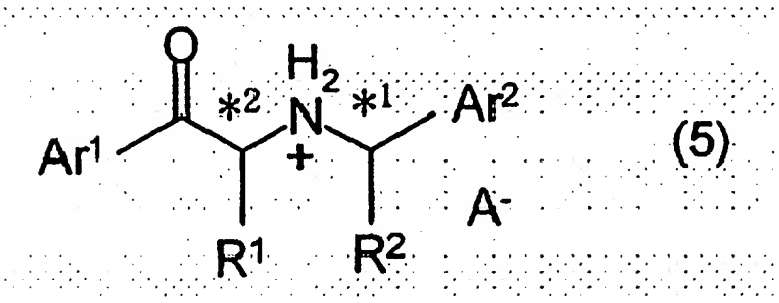
an optically active α-substituted aminoketone represented by formula (4):



(4)

(wherein Ar^1, R^1 and *2 are the same as in formula (7), Ar^2 represents a substituted or unsubstituted C_6-C_{15} aryl group, R^2 represents a C_1-C_{12} alkyl group and*1 represents an asymmetric carbon atom)

or of an optically active α-substituted aminoketone salt represented by formula (5) :



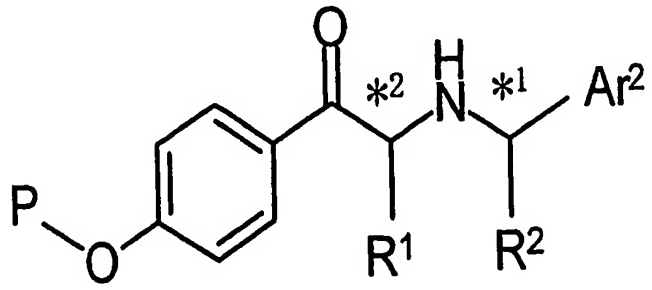
(5)

(wherein Ar^1, Ar^2, R^1, R^2, *1, and *2 are the same as in formula (4), and A^- represents a counter anion).

27. (withdrawn): The process according to claim 26, wherein the anti-isomer is selectively reduced by hydrogenation in the presence of a transition metal catalyst while simultaneously performing the hydrogenolysis.

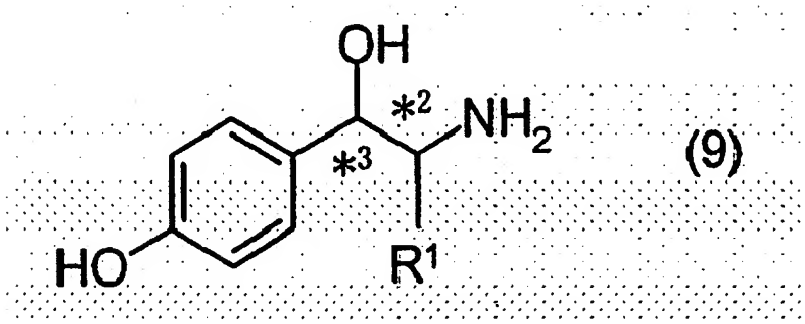
28. (withdrawn): The process according to claim 27, wherein the transition metal catalyst comprises palladium-carbon or palladium(II) hydroxide-carbon.

29. (withdrawn): The process according to claim 26, wherein an optically active α-substituted aminoketone represented by formula (11) or a salt thereof:



(11)

(wherein R^1, R^2, Ar^2, *1 and*2 are the same as in formula (4), and P represents a protecting group protecting the hydroxyl group) is stereoselectively reduced while simultaneously performing the hydrogenolysis after removing the protecting group protecting the hydroxyl group to yield an optically active β-amino alcohol represented by formula (9) or a salt thereof



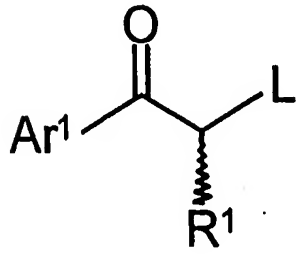
(wherein R^1 and *2 are the same as in formula (11), and *3 represents an asymmetric carbon atom).

30. (withdrawn): The process according to claim 29, wherein P is a benzyl-containing protecting group, an aroyl-containing protecting group, or a sulfonyl-containingtype protecting group.

31. (withdrawn): The process according to claim 29, wherein in formula (9), the absolute configuration at *2 is S and the absolute configuration at *3 is R; or the absolute configuration at *2 is R and the absolute configuration at *3 is S.

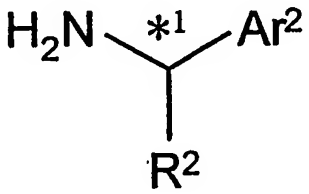
32. (withdrawn): The process according to claim 26, wherein the optically active α-substituted aminoketone represented by formula (4) or the optically active α-substituted aminoketone salt represented by formula (5) are produced by the process comprising the steps of:

reacting an α-substituted ketone represented by formula (1):



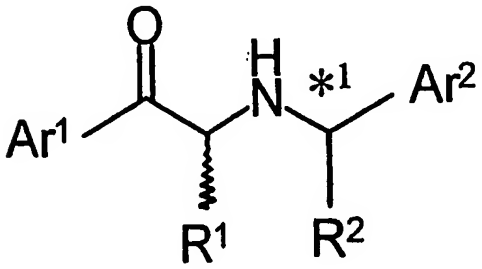
(1)

(wherein Ar^1 and R^1 are the same as in formula (4) , and L represents a leaving group) with an optically active amine represented by formula (2):



(2)

(wherein Ar^2, R^2, and *1 are the same as in formula (4) to yield a mixture of diastereomers of an optically active α-substituted aminoketone represented by formula (3):

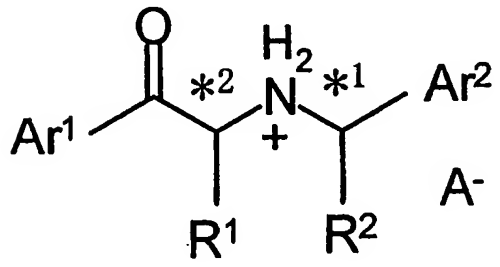


(3)

(wherein Ar^1, Ar^2, R^1, R^2, and *1 are the same as above); and

isolating one diastereomer from the mixture after optionally yielding salts of the diastereomers with an acid .

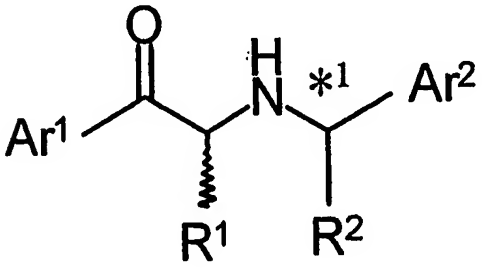
33. (withdrawn): A process for isolating an optically active α-substituted aminoketone salt represented by formula (5):



(5)

(wherein Ar^1 and Ar^2 each independently represent a substituted or unsubstituted C_6-C_{15} aryl group, R^1 represents a C_1-C_{12} alkyl or C_7-C_{12} aralkyl group, R^2 represents a C_1-C_{12} alkyl group, *1 and *2 each represent an asymmetric carbon atom, and A^- represents a counter anion), comprising the steps of:

yielding salts from an acid and a mixture of diastereomers of an optically active α-substituted aminoketone represented by formula (3):



(3)

(wherein Ar^1, R^1, R^2, Ar^2, and *1 are the same as above); and

preferentially crystallizing the salt of one diastereomer from a solvent.

34. (withdrawn): The isolation process according to claim 33, wherein the acid is sulfonic acid.

35. (withdrawn): The isolation process according to claim 34, wherein the sulfonic acid is methanesulfonic acid.

36. (withdrawn): The isolation process according to claim 34 or 35, wherein the solvent is at least one selected from ester solvents, ether solvents, ketone solvents, halogenated solvents, alcohol solvents, hydrocarbon solvents, nitrile solvents, and water.

37. (withdrawn): The isolation process according to claim 34 or 35, wherein the solvent is ethyl acetate, acetone, or dimethoxyethane.

38. (withdrawn): The isolation process according to claim 34, wherein, in formula (5), the absolute configuration at *2 is S and the absolute configuration at *1 is R; or the absolute configuration at *2 is R and the absolute configuration at *1 is S.

39. (withdrawn): The isolation process according to claim 33, wherein the acid is hydrogen halide.

40. (withdrawn): The isolation process according to claim 39, wherein the hydrogen halide is hydrogen chloride or hydrogen bromide.

41. (withdrawn): The isolation process according to claim 39 or 40, wherein the solvent is an alcohol solvent or water.

42. (withdrawn): The isolation process according to claim 39 or 40, wherein the solvent is ethanol or a mixture of ethanol and water.

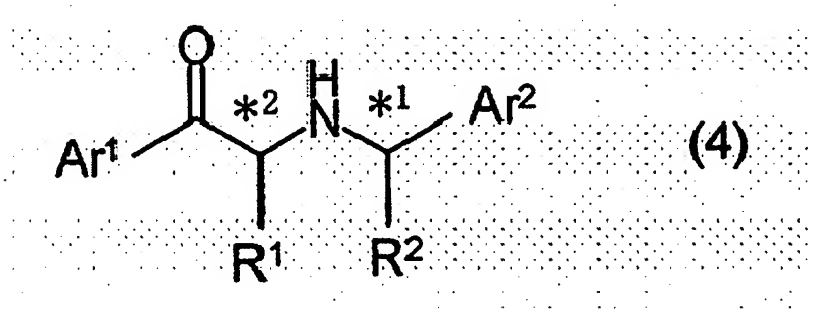
43. (withdrawn): The isolation process according to claim 39, wherein, in formula (5), the absolute configuration at *2 is R and the absolute configuration at *1 is R; or the absolute configuration at *2 is S and the absolute configuration at *1 is S.

44. (withdrawn): The isolation process according to claim 33, wherein Ar^2 is a phenyl group or a p-methoxyphenyl group; and R^2 is a methyl group.

45. (withdrawn): The isolation process according to claim 33, wherein R^1 is a methyl group or an ethyl group.

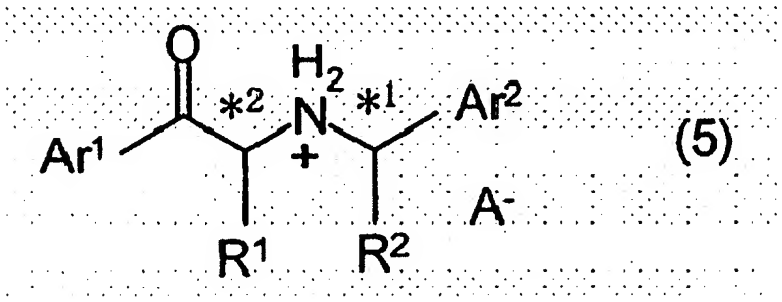
46. (withdrawn): The isolation process according to claim 33, wherein Ar^1 is a phenyl group, a p-hydroxyphenyl group, a p-benzyloxyphenyl group, a p-benzoyloxyphenyl group, or a p-methanesulfonyloxyphenyl group.

47. (previously presented): An optically active α-substituted aminoketone represented by formula (4)



wherein Ar^1 and Ar^2 each independently represent a substituted or unsubstituted C_6-C_{15} aryl group, R^2 represents a C_1-C_{12} alkyl group, *1 and *2 each represent an asymmetric carbon atom and R^1 is a C_1-C_4 alkyl group or a C_7-C_{12} aralkyl group, or

an optically active α-substituted aminoketone salt represented by formula (5)



wherein Ar^1, Ar^2, R^1, R^2, *1, and *2 are the same as above, and A^- represents a counter anion.

48. (original): The optically active α-substituted aminoketone or the optically active α-substituted aminoketone salt according to claim 47, wherein, in formula (4) or (5), Ar^2 is a phenyl or p-methoxyphenyl group, and R^2 is a methyl group.

49. (previously presented): The optically active α-substituted aminoketone or the optically active α-substituted aminoketone salt according to claim 47 , wherein, in formula (4) or (5), R^1 is a methyl group or an ethyl group.

50. (previously presented): The optically active α-substituted aminoketone or the optically active α-substituted aminoketone salt according to claim 47, wherein, in formula (4) or (5), Ar^1 is a phenyl group, a p-hydroxyphenyl group, a p-benzyloxyphenyl group, a p-benzoyloxyphenyl group, or a p-methanesulfonyloxyphenyl group.

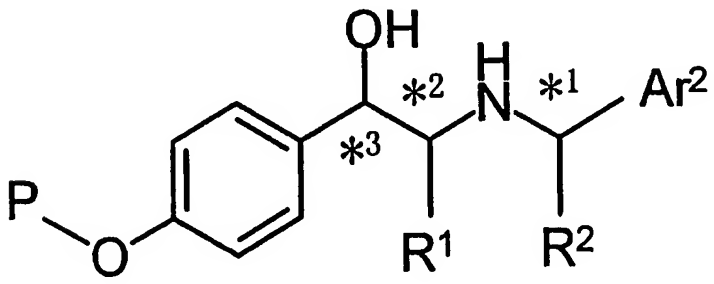
51. (previously presented): The optically active α-substituted aminoketone or the optically active α-substituted aminoketone salt according to claim 47, wherein, in formula (4) or (5), the absolute configuration at *2 is S and the absolute configuration at *1 is R; or the absolute configuration at *2 is R and the absolute configuration at *1 is S.

52. (previously presented): The optically active α-substituted aminoketone salt according to claim 47, wherein A^- in formula (5) is a methanesulfonate ion.

53. (previously presented): The optically active α-substituted aminoketone or the optically active α-substituted aminoketone salt according to claim 47, wherein, in formula (4) or (5), the absolute configuration at *2 is R and the absolute configuration at *1 is R; or the absolute configuration at *2 is S and the absolute configuration at *1 is S.

54. (previously presented): The optically active α-substituted aminoketone salt according to claim 47, wherein A^- in formula (5) is a chlorine ion or a bromine ion.

55. (withdrawn): An optically active β-substituted amino alcohol represented by formula (8) or a salt thereof:



(8)

(wherein R^1 represents a C_1-C_{12} alkyl or C_7-C_{12} aralkyl group, Ar^2 represents a substituted or unsubstituted C_6-C_{15} aryl group, R^2 represents a C_1-C_{12} alkyl group, *1, *2, and *3 each represent an asymmetric carbon atom, and P represents a hydrogen atom or a protecting group protecting the hydroxyl group).

56. (withdrawn): The optically active β-substituted amino alcohol or the salt thereof according to claim 55, wherein Ar^2 is a phenyl group or a p-methoxyphenyl group, and R^2 is a methyl group.

57. (withdrawn): The optically active β-substituted amino alcohol or the salt thereof according to claim 55 or 56, wherein R^1 is a methyl group or an ethyl group.

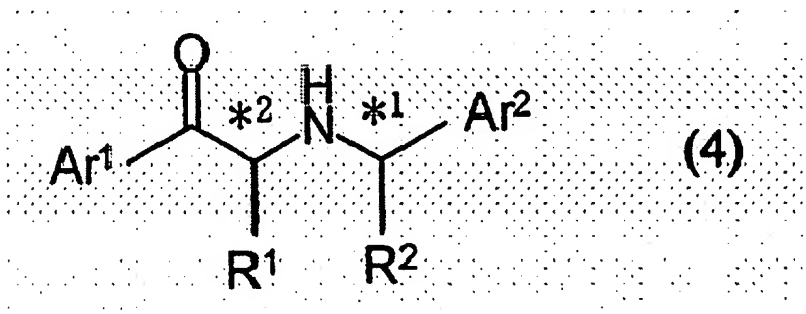
58. (withdrawn): The optically active β-substituted amino alcohol or the salt thereof according to claim 55, wherein P is a benzyl-containing protecting group, an aroyl-containing protecting group, or a sulfonyl-containing protecting group.

59. (withdrawn): The optically active β-substituted amino alcohol or the salt thereof according to claim 55, wherein P is a benzyl group, a benzoyl group, or a methanesulfonyl group.

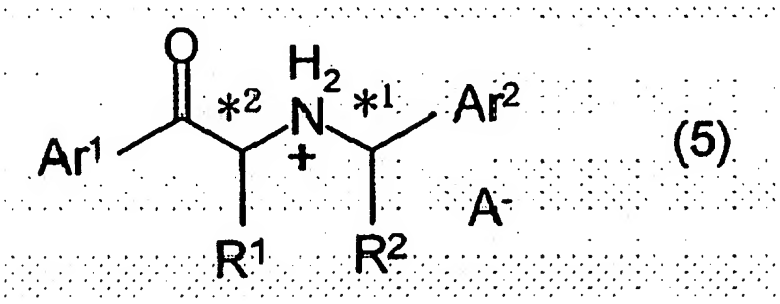
60. (withdrawn): The optically active β-substituted amino alcohol or the salt thereof according to claim 55, wherein, in formula (8), the absolute configuration at *2 is S, the absolute configuration at *1 is R, and the absolute configuration at *3 is R; or the absolute configuration at *2 is R, the absolute configuration at *1 is R, and the absolute configuration at *3 is S; or the absolute configuration at *2 is R, the absolute configuration at *1 is S, and the absolute configuration at *3 is S; or the absolute configuration at *2 is S, the absolute configuration at *1 is S, and the absolute configuration at *3 is R.

61 - 70 (canceled).

71. (new): A process for producing an optically active α-substituted aminoketone represented by formula (4):

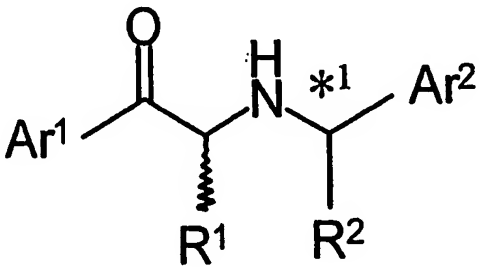


(wherein Ar^1 and Ar^2 each independently represent a substituted or unsubstituted C_6-C_{15} aryl group, R^1 represents a C_1-C_{12} alkyl or C_7-C_{12} aralkyl group, R^2 represents a C_1-C_{12} alkyl group, *1 and *2 each represent an asymmetric carbon atom) or an optically active α-substituted aminoketone salt represented by formula (5):



(wherein Ar^1, Ar^2, R^1, R^2, *1, and *2 are the same as above, and A^- represents a counter anion), the process comprising the step of:

isolating one diastereomer from the mixture of diastereomers of an optically active α-substituted aminoketone represented by formula (3):



(3)

(wherein Ar^1, Ar^2, R^1, R^2, and *1 are the same as above) after optionally yielding salts of the diestereomers with an acid.